

## Glossary

### A

**Activated Sludge:** Product that results when primary effluent is mixed with bacteria-laden sludge and then agitated and aerated to promote biological treatment, speeding the breakdown of organic matter in raw sewage undergoing secondary waste treatment.

**Advanced Treatment:** A level of wastewater treatment more stringent than secondary treatment; requires an 85 percent reduction in conventional pollutant concentration or a significant reduction in non-conventional pollutants. Sometimes called tertiary treatment.

**Advanced Wastewater Treatment:** Any treatment of sewage that goes beyond the secondary or biological water treatment stage and includes the removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids. (See primary, secondary treatment.)

**Aeration:** A process that promotes biological degradation of organic matter in water. The process may be passive (as when waste is exposed to air), or active (as when a mixing or bubbling device introduces the air).

**Algae:** Simple rootless plants that grow in sunlit waters in proportion to the amount of available nutrients. They can affect water quality adversely by lowering the dissolved oxygen in the water. They are food for fish and small aquatic animals.

**Algal Blooms:** Sudden spurts of algal growth, which can affect water quality adversely and indicate potentially hazardous changes in local water chemistry.

**Assimilation:** The ability of a body of water to purify itself of pollutants.

**Assimilative Capacity:** The capacity of a natural body of water to receive wastewaters or toxic materials without deleterious effects and without damage to aquatic life or humans who consume the water.

### B

**Bacteria:** (Singular: bacterium) Microscopic living organisms that can aid in pollution control by metabolizing organic matter in sewage, oil spills or other pollutants. However, bacteria in soil, water or air can also cause human, animal and plant health problems. Measured in colonies per unit per 100 milliliters of sample (cfu/100 ml).

**Best Management Practice (BMP):** Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

**Biochemical Oxygen Demand (BOD):** A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. The greater the BOD, the greater the degree of pollution.

**Bio Roughing:** Attached biological growth used for BOD removal and nitrification. Used as the first stage of the nitrification process.

**Biotic Community:** A naturally occurring assemblage of plants and animals that live in the same environment and are mutually sustaining and interdependent.

### C

**CFR:** Code of Federal Regulation

**Capture:** The total volume of flow collected in the combined sewer system during precipitation events on a system-wide, annual average basis (not percent of volume being discharged).

**Chlorination:** The application of chlorine to drinking water, sewage, or industrial waste to disinfect or to oxidize undesirable compounds.

**Collection System:** Pipes used to collect and carry wastewater from individual sources to an interceptor sewer that will carry it to a treatment facility.



**Combined Sewer Overflows:** Discharge of a mixture of storm water and domestic waste when the flow capacity of a sewer system is exceeded during rainstorms.

**Combined Sewers:** A sewer system that carries both sewage and storm-water runoff. Normally, its entire flow goes to a waste treatment plant, but during a heavy storm, the volume of water may be so great as to cause overflows of untreated mixtures of storm water and sewage into receiving waters. Storm-water runoff may also carry toxic chemicals from industrial areas or streets into the sewer system.

**Cost-Benefit Analysis:** A quantitative evaluation of the costs which would be incurred by implementing an environmental regulation versus the overall benefits to society of the proposed action.

**CSO:** See combined sewer overflows.

**CWA:** Clean Water Act

## D

**DCAM:** Department of Capital Asset Management

**Design Capacity:** The average daily flow that a treatment plant or other facility is designed to accommodate.

**Designated Uses:** Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act. Uses can include cold water fisheries, public water supply, recreation, and irrigation.

**Discharge:** Flow of surface water in a stream or canal or the outflow of ground water from a flowing artesian well, ditch, or spring. Can also apply to discharge of liquid effluent from a facility or to chemical emissions into the air through designated venting mechanisms.

**Disinfectant:** A chemical or physical process that kills disease-causing organisms in water, air, or on surfaces. Chlorine is often used to disinfect sewage treatment effluent, water supplies, wells, and swimming pools.

**Dissolved Oxygen (DO):** The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. DO levels are considered a most important indicator of a water body's ability to support desirable aquatic life. Secondary and advanced waste treatment are generally designed to ensure adequate DO in waste-receiving waters.

**DNR:** Indiana Department of Natural Resources

**DPW:** Department of Public Works

## E

**Effluent Guidelines:** Technical EPA documents which set effluent limitations for given industries and pollutants.

**Effluent Limitation:** Restrictions established by a state or EPA on quantities, rates, and concentrations in wastewater discharges.

**Effluent Standard:** (See effluent limitation.)

**Effluent:** Wastewater—treated or untreated—that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

**EHRC:** Enhanced High Rate Clarification

**EPA:** Environmental Protection Agency

## F

**FCWRF:** Fall Creek Water Reclamation Facility

**Floatables:** Large floating material sometimes characteristic of sanitary wastewater and storm runoff which includes litter and trash.

**Food Chain:** A sequence of organisms, each of which uses the next, lower member of the sequence as a food source.



## G

**Game Fish:** Species like trout, salmon, or bass, caught for sport. Many of them show more sensitivity to environmental change than “rough” fish.

**GIS:** Geographical Information System

**GPD:** Gallons per Day

## H

**Holding Pond:** A pond or reservoir, usually made of earth, built to store polluted runoff.

**HRT:** High Rate Treatment

**Hypoxia/Hypoxic Waters:** Waters with dissolved oxygen concentrations of less than 2 ppm, the level generally accepted as the minimum required for most marine life to survive and reproduce.

## I

**I/I:** Inflow/Infiltration

**IBI:** Indices of Biological Integrity

**IDEM:** Indiana Department of Environmental Management

**Infiltration:** The penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls.

**Inflow:** Entry of extraneous rain water into a sewer system from sources other than infiltration, such as basement drains, manholes, storm drains, and street washing.

**Influent:** Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

**Interceptor Sewers:** Large sewer lines that, in a combined system, control the flow of sewage to the treatment plant. In a storm, they allow some of the sewage to flow directly into a receiving stream, thus keeping it from overflowing onto the streets. Also used in separate systems to collect the flows from main and trunk sewers and carry them to treatment points.

**IPL or IPALCO:** Indianapolis Power and Light

**IPS:** Indianapolis Public Schools

## K

**Knee-of-the-curve:** The point where the incremental change in the cost of the control alternative per change in performance of the control alternative changes most rapidly.

## L

**Long Term Control Plan (LTCP):** A document developed by CSO communities to describe existing waterway conditions and various CSO abatement technologies that will be used to control overflows.

## M

**Macro-invertebrate:** Invertebrate (no spinal column) organism that is too large to pass through a No. 40 Screen (0.417mm).

**Million-Gallons Per Day (MGD):** A measure of water flow.

**MHI:** Median Household Income



**Municipal Sewage:** Wastes (mostly liquid) originating from a community; may be composed of domestic wastewaters and/or industrial discharges.

## N

**National Pollutant Discharge Elimination System (NPDES):** A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

**NH<sub>3</sub>:** Ammonia

**Non-Point Sources (NPS):** Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

**Nutrient:** Any substance assimilated by living things that promotes growth. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

## O

**Operation and Maintenance (O&M):** Actions taken after construction to ensure that facilities constructed will be properly operated and maintained to achieve normative efficiency levels and prescribed effluent limitations in an optimum manner.

**Organic:** (1) Referring to or derived from living organisms. (2) In chemistry, any compound containing carbon.

**Organic Chemicals/Compounds:** Naturally occurring (animal or plant-produced or synthetic) substances containing mainly carbon, hydrogen, nitrogen, and oxygen.

**Organic Matter:** Carbonaceous waste contained in plant or animal matter and originating from domestic or industrial sources.

## P

**pH:** An expression of the intensity of the basic or acid condition of a liquid; may range from 0 to 14, where 0 is the most acid and 7 is neutral. Natural waters usually have a pH between 6.5 and 8.5.

**PCBs:** Polychlorinated biphenyls

**PE:** Primary Effluent

**Point Source:** A stationary location or fixed facility from which pollutants are discharged; any single identifiable source of pollution; e.g., a pipe, ditch, ship, ore pit, factory smokestack.

**Pretreatment:** Processes used to reduce, eliminate, or alter the nature of wastewater pollutants from non-domestic sources before they are discharged into Publicly Owned Treatment Works (POTWs).

**Primary Waste Treatment:** First steps in wastewater treatment; screens and sedimentation tanks are used to remove most materials that float or will settle. Primary treatment removes about 30 percent of carbonaceous biochemical oxygen demand from domestic sewage.

## R

**Raw Sewage:** Untreated wastewater and its contents.

**Riparian Habitat:** Areas adjacent to rivers and streams with a differing density, diversity, and productivity of plant and animal species relative to nearby uplands.

**Run-Off:** That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other



surface-water. It can carry pollutants from the air and land into receiving waters.

**RTC:** Real-Time Control

## S

**Sanitary Sewers:** Underground pipes that carry off only domestic or industrial waste, not storm water.

**SBR:** Sequencing Batch Reactor

**Secondary Treatment:** The second step in most publicly owned waste treatment systems in which bacteria consume the organic parts of the waste. It is accomplished by bringing together waste, bacteria, and oxygen in trickling filters or in the activated sludge process. This treatment removes floating and settleable solids and about 90 percent of the oxygen-demanding substances and suspended solids. Disinfection is the final stage of secondary treatment. (See: primary, tertiary treatment.)

**Sedimentation:** Letting solids settle out of wastewater by gravity during treatment.

**Sedimentation Tanks:** Wastewater tanks in which floating wastes are skimmed off and settled solids are removed for disposal.

**Sediments:** Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.

**SF:** Square foot

**Sediment Oxygen Demand (SOD):** A measure of the amount of oxygen consumed in the biological process that breaks down organic matter in the sediment.

**Septic System:** An on-site system designed to treat and dispose of domestic sewage. A typical septic system consists of a tank that receives raw sewage and a system of tile lines or a pit that is used for the disposal of the liquid effluent (sludge) that remains after the decomposition of solids in the tank. The tank must be pumped out periodically.

**Septic Tank:** An underground storage tank for wastes from homes not connected to a sewer line. Waste goes directly from the home to the tank. (See: septic system.)

**Settleable Solids:** Material heavy enough to sink to the bottom of a wastewater treatment tank.

**Settling Tank:** A holding area for wastewater, where heavier particles sink to the bottom for removal and disposal.

**Sewage Sludge:** Sludge produced at a Publicly Owned Treatment Works (POTW), the disposal of which is regulated under the Clean Water Act.

**Sewage:** The waste and wastewater produced by residential and commercial sources and discharged into sewers.

**Sewer:** A channel or conduit that carries wastewater and storm-water runoff from the source to a treatment plant or receiving stream. “Sanitary” sewers carry household, industrial, and commercial waste. “Storm” sewers carry runoff from rain or snow. “Combined” sewers handle both.

**Sewerage:** The entire system of sewage collection, treatment, and disposal.

**SRCER:** Stream Reach Characterization and Evaluation Report

**SRF:** State Revolving Fund

**Storage:** Temporary holding of waste pending treatment or disposal, as in containers, tanks, waste piles, and surface impoundments.

**Storm Sewer:** A system of pipes (separate from sanitary sewers) that carries water runoff from buildings and land surfaces.

**Surcharge Flow:** Flow in which the water level is above the crown of the pipe causing pressurized flow in pipe segments.



**Surface Runoff:** Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of non-point source pollutants in rivers, streams, and lakes.

**Surface Water:** All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.)

**Suspended Loads:** Specific sediment particles maintained in the water column by turbulence and carried with the flow of water.

**Suspended Solids:** Small particles of solid pollutants that float on the surface of, or are suspended in, sewage or other liquids. They resist removal by conventional means.

**SWMM:** Storm Water Management Model

**SWMP:** Storm Water Management Plan

## T

**TDS:** Total Dissolved Solids

**Tertiary Treatment:** Advanced cleaning of wastewater that goes beyond the secondary or biological stage, removing nutrients such as phosphorus, nitrogen, and most BOD and suspended solids.

**TMDL:** Total Maximum Daily Loads

**Total Suspended Solids (TSS):** A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for “total suspended non-filterable solids.” (See: suspended solids.)

**Toxic Pollutants:** Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.

**Treated Wastewater:** Wastewater that has been subjected to one or more physical, chemical, and biological processes to reduce its potential of being a health hazard.

**Treatment:** (1) Any method, technique, or process designed to remove solids and/or pollutants from solid waste, waste-streams, effluents, and air emissions. (2) Methods used to change the biological character or composition of any regulated medical waste so as to substantially reduce or eliminate its potential for causing disease.

**Treatment Plant:** A structure built to treat wastewater before discharging it into the environment.

**Treatment, Storage, and Disposal Facility (TSD):** Site where a hazardous substance is treated, stored, or disposed. TSD facilities are regulated by EPA and states under RCRA.

## U

**Urban Runoff:** Storm water from city streets and adjacent domestic or commercial properties that carries pollutants of various kinds into the sewer systems and receiving waters.

**USEPA:** United States Environmental Protection Agency

**USGS:** United States Geological Survey

**UV:** Ultraviolet

## W

**Waste Treatment Lagoon:** Impoundment made by excavation or earth fill for biological treatment of wastewater.

**Waste Water Treatment Plant (WWTP):** A facility containing a series of tanks, screens, filters and other processes by which pollutants are removed from water.



**Wastewater:** The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

**Water Pollution:** The presence in water of enough harmful or objectionable material to damage the water's quality.

**Water Quality Criteria:** Levels of water quality expected to render a body of water suitable for its designated use. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.

**Water Quality Standards:** State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

**Watershed Approach:** A coordinated framework for environmental management that focuses public and private efforts on the highest priority problems within hydrologically defined geographic areas taking into consideration both ground and surface water flow.

**Watershed:** The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine at a common point.

**Weir:** (1) A wall or plate placed in an open channel to measure the flow of water. (2) A wall or obstruction used to control flow from settling tanks and clarifiers to ensure a uniform flow rate and avoid short-circuiting.

**WHPP:** Well Head Protection Program

**WQS:** Water Quality Standards

